but below that

of the insulator, high contrast inspection testing by laser-induced photoelectron emission can be expected. ***** SEE ORIGINAL DOCUMENT *****

The band alignments for such an ideal situation in the insulating material of the package is depicted in Fig. 1(a). With a perfect host material, the Fermi level EF would be at the middle of the energy gap EG which separates the valence band maximum Eval and the conduction band minimum Econd . The level for vacuum emission is the vacuum level Evac, which is normally just above Econd . Since the material is assumed ideal, there are no electronic states in the energy gap, so the highest energy occupied electron states lie at Eval, and the minimum energy required to raise electrons above Evac is the photoelectric threshold Ephoto = Evac - Eval . If any low concentration of electrons were available within the band gap, electron emission would be possible at threshold excitation energies starting at Ethermal = Evac - EF, because the highest such occupied electron states in the gap would be at EF .

- There are two contrasting situations which limit this approach:

non-ideal band alignments due to defect states and ideal

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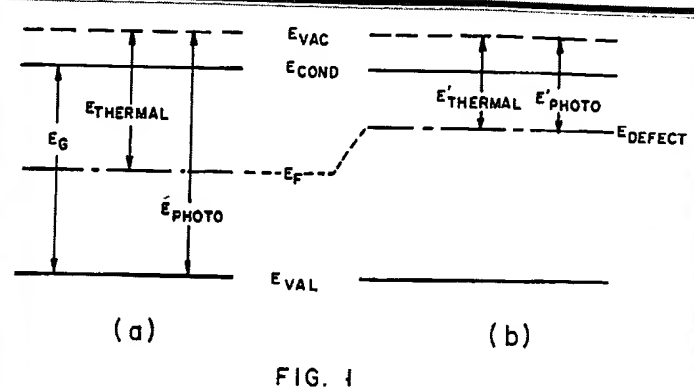
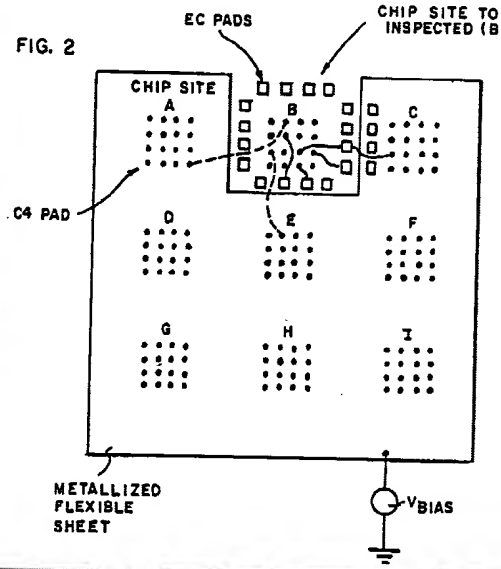


FIG. 1

FIG. 2



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